



#8

## SEQUENCE LISTING

<110> BONNEFOY, Jean-Yves Marcel Paul  
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<120> Antibodies to CD23, derivatives thereof, and their therapeutic uses

<130> 1430-256/PG3433US

<140> US 09/674,716

<141> 2001-01-22

<150> CA 2,328,606

<151> 1999-05-07

<150> PCT/GB99/01434

<151> 1999-05-07

<150> GB 9809839.5

<151> 1998-05-09

<160> 53

<170> PatentIn Ver. 2.1

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ctc tcc tgt gta gcc tct gga ttt act ttc agt ggc tac tgg atg tct 191  
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Trp Val Arg Gln Ser Pro Glu Lys Gly Leu Glu Trp Val Ala Glu Ile  
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 Arg Leu Lys Ser Asp Asn Tyr Ala Thr His Tyr Ala Glu Ser Val Lys  
 80 85 90 95

ggg aag ttc acc atc tca aga gat gat tcc aaa agt cgt ctc tac ctg 335  
 Gly Lys Phe Thr Ile Ser Arg Asp Asp Ser Lys Ser Arg Leu Tyr Leu  
 100 105 110

caa atg aac agc tta aga gct gaa gac agt gga gtt tat tac tgt aca 383  
 Gln Met Asn Ser Leu Arg Ala Glu Asp Ser Gly Val Tyr Tyr Cys Thr  
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gtt cag ttt ctg ggg gtg ctt atg ttc tgg atc tct gga gtc agt ggg 95  
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 Asp Ile Val Ile Thr Gln Asp Glu Leu Ser Asn Pro Val Thr Ser Gly  
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 Pro Gln Leu Leu Met Tyr Leu Met Ser Thr Arg Ala Ser Gly Val Ser  
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gac cgg ttt agt ggc agt ggg tca ggc aca gat ttc acc ctg gaa atc 335  
 Asp Arg Phe Ser Gly Ser Gly Ser Gly Thr Asp Phe Thr Leu Glu Ile  
 100 105 110

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 Ser Arg Val Lys Ala Glu Asp Val Gly Val Tyr Tyr Cys Gln Gln Leu  
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Val Lys Gly

<210> 13  
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<210> 14  
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<210> 15  
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<220>  
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<210> 16  
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 <212> PRT  
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Ala Gln Ala

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gag ccg gcc tcc atc tcc tgt cgc tcg agt aag agt ctc ctg tat aag 96  
 Glu Pro Ala Ser Ile Ser Cys Arg Ser Ser Lys Ser Leu Leu Tyr Lys  
 20 25 30

gat ggg aag aca tac ttg aat tgg tac ctg cag aag cca ggg cag tct 144  
 Asp Gly Lys Thr Tyr Leu Asn Trp Tyr Leu Gln Lys Pro Gly Gln Ser  
 35 40 45

cca cag ctc ctg atc tat ttg atg tcc acc cgg gca tca ggg gtc cct 192  
 Pro Gln Leu Leu Ile Tyr Leu Met Ser Thr Arg Ala Ser Gly Val Pro  
 50 55 60

gac agg ttc agt ggc agt gga tca ggc aca gat ttt aca ctg aaa atc 240  
 Asp Arg Phe Ser Gly Ser Gly Ser Gly Thr Asp Phe Thr Leu Lys Ile  
 65 70 75 80

agc aga gtg gag gct gag gat gtt ggg gtt tat tac tgt caa cag ctg 288  
 Ser Arg Val Glu Ala Glu Asp Val Gly Val Tyr Tyr Cys Gln Gln Leu  
 85 90 95

gta gag tat cca ttc acg ttc ggc caa ggg acc aag gtg gag atc aaa 336  
 Val Glu Tyr Pro Phe Thr Phe Gly Gln Gly Thr Lys Val Glu Ile Lys  
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tcc ctt aga ctc tcc tgt gca gct agc gga ttc act ttc agt ggc tac 96  
 Ser Leu Arg Leu Ser Cys Ala Ala Ser Gly Phe Thr Phe Ser Gly Tyr  
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tgg atg tcc tgg gtc cgc cag gct cca ggg aag ggg ctc gag tgg gtt 144  
 Trp Met Ser Trp Val Arg Gln Ala Pro Gly Lys Gly Leu Glu Trp Val  
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gct gaa att aga ttg aaa tct gat aat tat gca aca cat tat gcg gag 192  
 Ala Glu Ile Arg Leu Lys Ser Asp Asn Tyr Ala Thr His Tyr Ala Glu  
                   50                  55                  60

tct gtg aag ggg aaa ttc acc atc tca aga gat gat tca aaa tct aga 240  
 Ser Val Lys Gly Lys Phe Thr Ile Ser Arg Asp Asp Ser Lys Ser Arg  
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ctg tat ctg caa atg aac agc ctg aaa acc gag gac aca gcc gtg tat 288  
 Leu Tyr Leu Gln Met Asn Ser Leu Lys Thr Glu Asp Thr Ala Val Tyr  
                   85                  90                  95

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 Tyr Cys Thr Asp Phe Ile Asp Trp Gly Gln Gly Thr Leu Val Thr Val  
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tcc tca gcc tcc acc aag ggc cca tcg gtc ttc ccc ctg gca ccc tcc 384  
 Ser Ser Ala Ser Thr Lys Gly Pro Ser Val Phe Pro Leu Ala Pro Ser  
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tcc aag agc acc tct ggg ggc aca gcg gcc ctg ggc tgc ctg gtc aag 432  
 Ser Lys Ser Thr Ser Gly Gly Thr Ala Ala Leu Gly Cys Leu Val Lys  
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Asp Tyr Phe Pro Glu Pro Val Thr Val Ser Trp Asn Ser Gly Ala Leu	
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acc agc ggc gtg cac acc ttc ccg gct gtc cta cag tcc tca gga ctc	528
Thr Ser Gly Val His Thr Phe Pro Ala Val Leu Gln Ser Ser Gly Leu	
165 170 175	
tac tcc ctc agc agc gtg gtg acc gtg ccc tcc agc agc ttg ggc acc	576
Tyr Ser Leu Ser Ser Val Val Thr Val Pro Ser Ser Ser Leu Gly Thr	
180 185 190	
cag acc tac atc tgc aac gtg aat cac aag ccc agc aac acc aag gtg	624
Gln Thr Tyr Ile Cys Asn Val Asn His Lys Pro Ser Asn Thr Lys Val	
195 200 205	
gac aag aaa gtg gag ccc aaa tct tgt gac aaa act cac aca tgc cca	672
Asp Lys Lys Val Glu Pro Lys Ser Cys Asp Lys Thr His Thr Cys Pro	
210 215 220	
ccg tgc cca gca cct gaa ctc gcg ggg gca ccg tca gtc ttc ctc ttc	720
Pro Cys Pro Ala Pro Glu Leu Ala Gly Ala Pro Ser Val Phe Leu Phe	
225 230 235 240	
ccc cca aaa ccc aag gac acc ctc atg atc tcc cgg acc cct gag gtc	768
Pro Pro Lys Pro Lys Asp Thr Leu Met Ile Ser Arg Thr Pro Glu Val	
245 250 255	
aca tgc gtg gtg gtg gac gtg agc cac gaa gac cct gag gtc aag ttc	816
Thr Cys Val Val Val Asp Val Ser His Glu Asp Pro Glu Val Lys Phe	
260 265 270	
aac tgg tac gtg gac ggc gtg gag gtg cat aat gcc aag aca aag ccg	864
Asn Trp Tyr Val Asp Gly Val Glu Val His Asn Ala Lys Thr Lys Pro	
275 280 285	
cgg gag gag cag tac aac agc acg tac cgt gtg gtc agc gtc ctc acc	912
Arg Glu Glu Gln Tyr Asn Ser Thr Tyr Arg Val Val Ser Val Leu Thr	
290 295 300	
gtc ctg cac cag gac tgg ctg aat ggc aag gag tac aag tgc aag gtc	960
Val Leu His Gln Asp Trp Leu Asn Gly Lys Glu Tyr Lys Cys Lys Val	
305 310 315 320	
tcc aac aaa gcc ctc cca gcc ccc atc gag aaa acc atc tcc aaa gcc	1008
Ser Asn Lys Ala Leu Pro Ala Pro Ile Glu Lys Thr Ile Ser Lys Ala	
325 330 335	
aaa ggg cag ccc cga gaa cca cag gtg tac acc ctg ccc cca tcc cgg	1056
Lys Gly Gln Pro Arg Glu Pro Gln Val Tyr Thr Leu Pro Pro Ser Arg	
340 345 350	
gat gag ctg acc aag aac cag gtc agc ctg acc tgc ctg gtc aaa ggc	1104
Asp Glu Leu Thr Lys Asn Gln Val Ser Leu Thr Cys Leu Val Lys Gly	
355 360 365	



ttc tat ccc agc gac atc gcc gtg gag tgg gag agc aat ggg cag ccg	1152
Phe Tyr Pro Ser Asp Ile Ala Val Glu Trp Glu Ser Asn Gly Gln Pro	
370 375 380	

gag aac aac tac aag acc acg cct ccc gtg ctg gac tcc gac ggc tcc	1200
Glu Asn Asn Tyr Lys Thr Thr Pro Pro Val Leu Asp Ser Asp Gly Ser	
385 390 395 400	

ttc ttc ctc tac agc aag ctc acc gtg gac aag agc agg tgg cag cag	1248
Phe Phe Leu Tyr Ser Lys Leu Thr Val Asp Lys Ser Arg Trp Gln Gln	
405 410 415	

ggg aac gtc ttc tca tgc tcc gtg atg cat gag gct ctg cac aac cac	1296
Gly Asn Val Phe Ser Cys Ser Val Met His Glu Ala Leu His Asn His	
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<220>  
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<223> Description of Artificial Sequence: Oligo

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<210> 23  
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<223> Description of Artificial Sequence: Oligo

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<210> 24  
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<223> Description of Artificial Sequence: Oligo

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ggc 63

<210> 25  
<211> 63  
<212> DNA  
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<223> Description of Artificial Sequence: Oligo

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<210> 26  
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<223> Description of Artificial Sequence: Oligo

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<210> 27  
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<223> Description of Artificial Sequence: Oligo

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<212> DNA

<213> Artificial Sequence

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<223> Description of Artificial Sequence: Oligo

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<210> 29

<211> 60

<212> DNA

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<223> Description of Artificial Sequence: Oligo

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<212> DNA

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<223> Description of Artificial Sequence: Oligo

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<212> DNA

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<223> Description of Artificial Sequence: Oligo

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<212> DNA

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<211> 60

<212> DNA

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<223> Description of Artificial Sequence: Oligo

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<212> DNA

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<223> Description of Artificial Sequence: Oligo

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<211> 69

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<223> Description of Artificial Sequence: Oligo

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<211> 48

<212> DNA

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<223> Description of Artificial Sequence: Oligo

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<223> Description of Artificial Sequence: Oligo

<400> 38  
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<210> 39  
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<223> Description of Artificial Sequence: Oligo

<400> 39  
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<211> 33  
<212> DNA  
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<223> Description of Artificial Sequence: Oligo

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<212> DNA  
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<223> Description of Artificial Sequence: Primer

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tcagcaaccc actcaagccc cttctctgga gactggcgga cccaagacat ccagtagcca 240
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cctcctccag actcctcaag cttcacttca ctctggaccc cttttaaaag aacaataaaa 360
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tgtgcctgac ccactgccac taaaccggtc tgagactcct gatgcacggg tggacatcaa 180
atacatcagg agctgaggag attgtcctgg tctctgcaga aaccaattca agtatgtctt 240
cccactctta tacaggagac tcttactaga cctgcaggag atggaaactg attctccaga 300
agtgcacagga ttggagagtt catcctgggt tatcacaata tccccactga ctccagagat 360
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<210> 48

<211> 348

<212> DNA

<213> Artificial Sequence

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<223> Description of Artificial Sequence: Humanised anti-CD23 antibody light chain variable region

<400> 48

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aaaatctgtg cctgatccac tgccactgaa cctgtcaggg acccctgatg cccgggtgga 180
catcaaatag atcaggagct gtggagactg ccctggcttc tgcaggatcc aattcaagta 240
tgtcttccca tccttatata ggagactctt actcgagcga caggagatgg aggccggctc 300
tccaggggtg acgggcaggg agagtggaga ctgagtcac acaatata 348

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<210> 49

<211> 1335

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Humanised anti-CD23 antibody heavy chain variable region

<400> 49

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tcatttaccc ggagacaggg agaggctctt ctgcgtgtag tggttgtgca gagcctcatg 60
catcacggag catgagaaga cgttcccctg ctgccacctg ctcttgtcca cggtagactt 120
gctgtagagg aagaaggagc cgtcggagtc cagcacggga ggcgtggctt tgtagtgtt 180
ctccggctgc ccattgctct cccactccac ggcgatgtcg ctgggataga agcctttgac 240
caggcaggtc aggtgacct ggttcttggc cagctcatcc cgggatgggg gcagggtgta 300
cacctgtggc tctcggggct gccctttggc tttggagatg gttttctcga tgggggctgg 360
gagggttttg ttggagacct tgcacttgta ctccttgcca ttcagccagt cctgggtgcag 420
gacggtgagg acgtgacca cacggtacgt gctgtgttac tgctcctccc gcggctttgt 480
cttggcatta tgcacctcca cgccgtccac gtaccagttg aacttgacct cagggtcttc 540
gtggctcacg tccaccacca cgcagtgtac ctcaggggtc cgggagatca tgagggtgtc 600

```

```

cttgggtttt ggggggaaga ggaagactga cgggtgcccc gcgagttcag gtgctgggca 660
cgggtgggcat gtgtgagttt tgtcacaaga tttgggctcc actttcttgt ccaccttggt 720
gttgctgggc ttgtgattca cgttgagat gtaggtctgg gtgccaagc tgctggaggg 780
cacggtcacc acgctgctga gggagtagag tcctgaggac tgtaggacag ccgggaaggt 840
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catttgcaga tacagtctag attttgaatc atctcttgag atggtgaatt tccccctcac 1140
agactccgca taatgtgttg cataattatc agatttcaat ctaatttcag caaccactc 1200
gagccccctt cctggagcct ggcggaccca ggacatccag tagccactga aagtgaatcc 1260
gctagctgca caggagagtc taagggaccc cccgggcttt accaagcctc ccccagactc 1320
caccagctgc acctc                                     1335

```

<210> 50  
 <211> 137  
 <212> PRT  
 <213> Mus musculus

```

<400> 50
Ala Leu Gln Leu Leu Ser Thr Gln Asp Leu Thr Met Asp Phe Gly Leu
  1              5              10              15

Ile Phe Phe Ile Val Leu Leu Lys Gly Val Gln Ser Glu Val Lys Leu
      20              25              30

Glu Glu Ser Gly Gly Gly Leu Val Gln Pro Gly Gly Ser Met Lys Leu
      35              40              45

Ser Cys Val Ala Ser Gly Phe Thr Phe Ser Gly Tyr Trp Met Ser Trp
      50              55              60

Val Arg Gln Ser Pro Glu Lys Gly Leu Glu Trp Val Ala Glu Ile Arg
      65              70              75              80

Leu Lys Ser Asp Asn Tyr Ala Thr His Tyr Ala Glu Ser Val Lys Gly
      85              90              95

Lys Phe Thr Ile Ser Arg Asp Asp Ser Lys Ser Arg Leu Tyr Leu Gln
      100             105             110

Met Asn Ser Leu Arg Ala Glu Asp Ser Gly Val Tyr Tyr Cys Thr Asp
      115             120             125

Phe Ile Asp Trp Gly Gln Gly Thr Leu
      130             135

```

<210> 51  
 <211> 145  
 <212> PRT  
 <213> Mus musculus

```

<400> 51
Ala Leu Gln Leu Leu Ser Thr Gln Asp Leu Thr Met Arg Phe Ser Val
  1              5              10              15

Gln Phe Leu Gly Val Leu Met Phe Trp Ile Ser Gly Val Ser Gly Asp

```



	20		25		30
Ile Val Ile Thr Gln Asp Glu Leu Ser Asn Pro Val Thr Ser Gly Glu	35	40	45		
Ser Val Ser Ile Ser Cys Arg Ser Ser Lys Ser Leu Leu Tyr Lys Asp	50	55	60		
Gly Lys Thr Tyr Leu Asn Trp Phe Leu Gln Arg Pro Gly Gln Ser Pro	65	70	75	80	
Gln Leu Leu Met Tyr Leu Met Ser Thr Arg Ala Ser Gly Val Ser Asp	85	90	95		
Arg Phe Ser Gly Ser Gly Ser Gly Thr Asp Phe Thr Leu Glu Ile Ser	100	105	110		
Arg Val Lys Ala Glu Asp Val Gly Val Tyr Tyr Cys Gln Gln Leu Val	115	120	125		
Glu Tyr Pro Phe Thr Phe Gly Ser Gly Thr Lys Leu Glu Ile Lys Arg	130	135	140		

Thr  
145

<210> 52

<211> 116

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Humanised anti-CD23 antibody light chain variable region

<400> 52

Asp Ile Val Met Thr Gln Ser Pro Leu Ser Leu Pro Val Thr Pro Gly	1	5	10	15
---	---	---	----	----

Glu Pro Ala Ser Ile Ser Cys Arg Ser Ser Lys Ser Leu Leu Tyr Lys	20	25	30
---	----	----	----

Asp Gly Lys Thr Tyr Leu Asn Trp Tyr Leu Gln Lys Pro Gly Gln Ser	35	40	45
---	----	----	----

Pro Gln Leu Leu Ile Tyr Leu Met Ser Thr Arg Ala Ser Gly Val Pro	50	55	60
---	----	----	----

Asp Arg Phe Ser Gly Ser Gly Ser Gly Thr Asp Phe Thr Leu Lys Ile	65	70	75	80
---	----	----	----	----

Ser Arg Val Glu Ala Glu Asp Val Gly Val Tyr Tyr Cys Gln Gln Leu	85	90	95
---	----	----	----

Val Glu Tyr Pro Phe Thr Phe Gly Gln Gly Thr Lys Val Glu Ile Lys	100	105	110
---	-----	-----	-----

Arg Thr Val Ala  
115

<210> 53

<211> 444

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Humanised anti-CD23 antibody heavy chain variable region

<400> 53

Glu Val Gln Leu Val Glu Ser Gly Gly Gly Leu Val Lys Pro Gly Gly  
1 5 10 15

Ser Leu Arg Leu Ser Cys Ala Ala Ser Gly Phe Thr Phe Ser Gly Tyr  
20 25 30

Trp Met Ser Trp Val Arg Gln Ala Pro Gly Lys Gly Leu Glu Trp Val  
35 40 45

Ala Glu Ile Arg Leu Lys Ser Asp Asn Tyr Ala Thr His Tyr Ala Glu  
50 55 60

Ser Val Lys Gly Lys Phe Thr Ile Ser Arg Asp Asp Ser Lys Ser Arg  
65 70 75 80

Leu Tyr Leu Gln Met Asn Ser Leu Lys Thr Glu Asp Thr Ala Val Tyr  
85 90 95

Tyr Cys Thr Asp Phe Ile Asp Trp Gly Gln Gly Thr Leu Val Thr Val  
100 105 110

Ser Ser Ala Ser Thr Lys Gly Pro Ser Val Phe Pro Leu Ala Pro Ser  
115 120 125

Ser Lys Ser Thr Ser Gly Gly Thr Ala Ala Leu Gly Cys Leu Val Lys  
130 135 140

Asp Tyr Phe Pro Glu Pro Val Thr Val Ser Trp Asn Ser Gly Ala Leu  
145 150 155 160

Thr Ser Gly Val His Thr Phe Pro Ala Val Leu Gln Ser Ser Gly Leu  
165 170 175

Tyr Ser Leu Ser Ser Val Val Thr Val Pro Ser Ser Ser Leu Gly Thr  
180 185 190

Gln Thr Tyr Ile Cys Asn Val Asn His Lys Pro Ser Asn Thr Lys Val  
195 200 205

Asp Lys Lys Val Glu Pro Lys Ser Cys Asp Lys Thr His Thr Cys Pro  
210 215 220

Pro Cys Pro Ala Pro Glu Leu Ala Gly Ala Pro Ser Val Phe Leu Phe  
225 230 235 240

Pro Pro Lys Pro Lys Asp Thr Leu Met Ile Ser Arg Thr Pro Glu Val  
 245 250 255  
 Thr Cys Val Val Val Asp Val Ser His Glu Asp Pro Glu Val Lys Phe  
 260 265 270  
 Asn Trp Tyr Val Asp Gly Val Glu Val His Asn Ala Lys Thr Lys Pro  
 275 280 285  
 Arg Glu Glu Gln Tyr Asn Ser Thr Tyr Arg Val Val Ser Val Leu Thr  
 290 295 300  
 Val Leu His Gln Asp Trp Leu Asn Gly Lys Glu Tyr Lys Cys Lys Val  
 305 310 315 320  
 Ser Asn Lys Ala Leu Pro Ala Pro Ile Glu Lys Thr Ile Ser Lys Ala  
 325 330 335  
 Lys Gly Gln Pro Arg Glu Pro Gln Val Tyr Thr Leu Pro Pro Ser Arg  
 340 345 350  
 Asp Glu Leu Thr Lys Asn Gln Val Ser Leu Thr Cys Leu Val Lys Gly  
 355 360 365  
 Phe Tyr Pro Ser Asp Ile Ala Val Glu Trp Glu Ser Asn Gly Gln Pro  
 370 375 380  
 Glu Asn Asn Tyr Lys Thr Thr Pro Pro Val Leu Asp Ser Asp Gly Ser  
 385 390 395 400  
 Phe Phe Leu Tyr Ser Lys Leu Thr Val Asp Lys Ser Arg Trp Gln Gln  
 405 410 415  
 Gly Asn Val Phe Ser Cys Ser Val Met His Glu Ala Leu His Asn His  
 420 425 430  
 Tyr Thr Gln Lys Ser Leu Ser Leu Ser Pro Gly Lys  
 435 440

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